Pathways and Management of Marine Nonindigenous Species in the Shared Waters of British Columbia and Washington

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Abstract

The introduction of nonnative or nonindigenous species (NIS) to new environments can cause environmental and economic problems, although many NIS introductions are also considered beneficial. Pathways of NIS introduction to the shared marine waters of British Columbia and Washington include: aquaculture activities; the aquarium trade; public aquaria; releases of NIS by individuals; commercial, military, and recreational marine vessels; research institution;; and seafood commodity distribution. Risk of NIS introduction from aquaculture is well defined and the industry is highly regulated. Risk of NIS introduction from aquarium activities and release of NIS by individuals is poorly defined, and only limited information is available to define the risks from research, seafood distribution, and marine recreational vessel activities. The relative risk associated with the large inoculation of marine NIS from ballast-water discharges is assessed from shipping industry data.

More complete and detailed baseline information regarding the presence and distribution of native species and NIS in shared waters is needed, because in some cases, there is disagreement on whether particular species are native or introduced, or whether or not particular NIS are established. A zero-risk condition is unattainable; a more realistic objective of NIS management should be to reduce the frequency of unintended introductions, and to understand and minimize negative consequences of introduced species.

Biodiversity of Eelgrass and Infaunal Communities in the Intercauseway Area of Roberts Bank, B.C.

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Abstract

Eelgrass beds alter the sedimentological and physico-chemical environments of tidal flats, impacting the distribution and abundance of infaunal populations. Expansion of a native eelgrass species, *Zostera marina*, and colonization of an exotic eelgrass species, *Zostera japonica* have been observed following construction and development of two causeways on Roberts Bank in the late 1960s. Eelgrass and infaunal communities and sedimentological properties were surveyed in October 1997 to determine the impact of expanding eelgrass beds on the biodiversity of infauna within the intercauseway area. Samples were collected along three station transects located at high-, mid-, and low-intertidal levels within this area and also at three reference stations on the north side of the Coal Port causeway for a comparison of pre- and post-causeway conditions. The high-intertidal transect is typified by microalgal biofilms, while the mid- and low-intertidal transects are dominated by *Zostera japonica*, and *Zostera marina*, respectively. An increase in biodiversity of infauna was observed with increasing eelgrass root biomass and decreasing tidal height. A comparison of infauna between the north and south side of the Coal Port causeway reveals a greater diversity of macrofauna within the intercauseway region. Shifts in infaunal communities associatied with the seasonal expansion and recession of eelgrass will be monitored over the next year to assess the trophic resource value of these eelgrass habitats for commercial fisheries and internationally migrating birds.